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ABSTRACT

Within the area of attribution theory, an overjustification effect is inferred if, following reward for an intrinsically interesting activity, individuals subsequently show less interest in that activity than comparable individuals who receive no reward. In an attempt to isolate the overjustification effect, 60 college students (30 male, 30 female) played 14 games of pinball with two eight-minute free periods before and after the games, in which subjects were told they could do as they wished. Subjects were assigned to one of six treatment conditions: no reward for playing pinball (intrinsic); a lump sum payment (noncontingent); feedback on a continuous or variable reinforcment schedule without payment (contingent feedback); or feedback on the same schedule with payment (contingent payment). An analysis of the results for amount of free time spent playing revealed no overjustification effect. Subjects given continuous feedback (paid or unpaid) liked the task more. Only variable reinforcement appeared to maintain play during a "free-choice" period. (Author/BL)

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Overjustification and Intermittent Reinforcement

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Abstract

Within the area of attribution theory "overjustification" is inferred if reward for an intrinsically interesting task reduces subsequent interest in the task. Several studies have found, however, that reward increases intrinsic interest. In attempt to isolate the effect, subjects were given no reward for playing pinball (intrinsic); a lump sum payment (noncontingent); feedback on a CRF or VR schedule without payment (contingent feedback); or feedback on the same schedules with payment (contingent payment). In no case did overjustification occur. In all cases, subjects given contingent feedback (paid or unpaid) liked the task more. Only VR appeared to maintain play during a "free-choice" (or extinction) period.

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Overjustification and Intermittent Reinforcement

Within the area of attribution theory in social psychology an "overjustification effect" has been inferred if, following reward for an intrinsically interesting activity, individuals subsequently show less interest in that activity than do comparable individuals who receive no reward (e.g., Deci, 1971; Lepper, Greene, & Nisbett, 1973; Williams, 1980). Several studies have failed to find the effect, however, (e.g., Feingold & Mahoney, 1975; Reiss & Sushinsky, 1975), and it is by no means clear which situations reliably produce the effect and which produce an opposite or "reward" effect.

The term reward in these studies is not always defined in terms of behavior and thus not necessarily synonymous with reinforcer. To the extent that these rewards are reinforcers, however, the "free-choice" or nonreward phase which follows reinforcement is extinction. The present study compared the effects of social versus monetary rewards, contingent versus noncontingent payment, and schedule of reward on amount of play and liking for the game during a free-choice/extinction period.

Method

Subjects

Subjects were 30 male and 30 female introductory psychology students randomly assigned to one of six conditions.

Apparatuses

The apparatuses were a Race-O-Rama (Kenner Corporation) electric toy pinball machine, a universal reinforcer dispenser, and a cumulative record which recorded (in an adjacent room) time spent playing during the free-choice periods.

Procedure

A summary of the design and written instructions to subjects, which represent the treatment conditions, are presented in Table 1. The design is a two by three analysis of variance; the two factors are payment (no money versus $1.20) and

Table 1

Instructions and Experimental Design

Payment	Contingency: None	CRF	VR
None	Play 14 games, signal when through, wait in room.	Same as at left, but a token indicating a "win" was delivered for each of last 12 games.	Same as at left, but tokens were delivered for a random three of the last 12 games.
$1.20	Same as above, but lump-sum payment of $1.20 for participating.	Same as above, but tokens exchangeable for $0.10 each.	Same as above, but tokens exchangeable for $0.40.

schedule/contingency (no contingency, continuous reinforcement, and variable-ratio 4).

Each subject was asked to play 14 games of pinball. There were two eight-minute free periods, one before and one after the 14 games, ostensibly for the experimenter to set up materials, during which subjects were told they could do what they wished.

Results

Analysis of variance of difference scores for amount of free time spent playing (second minus first free time) revealed no effects. Analysis of game-rating data revealed a main effect for contingency, $F(1, 54) = 7.19$, $p < .01$ and no other significant effects. As the means in Table 2 indicate, subjects rated the games more favorably if they were accompanied by some form of feedback on either a CRF or VR schedule. While the three means for payment are all higher than the comparable means for nonpayment, the payment factor was not statistically significant ($p > .20$).

The number of subjects in each condition who played for some portion of the free times are shown in Table 3. While the previous analysis of playing time revealed no effects, these data indicate that during the second free time (analogous to extinction) more people played following VR than following the other two contingencies. Combined across payment, the numbers of subjects who played during the second free-choice period (7, 9, and 15) produced $x^2 = 6.95$, $p < .05$, which indicates differences in "resistance to extinction" across these groups.

Discussion

Since we attempted to include in our procedure components said to be critical to obtaining overjustification, failure to find the effect is puzzling.

Table 2

Mean Ratings of the Task Across Conditions

	Contingency		
Payment	None	CRF	VR
None	4.80	5.80	6.00
$1.20	5.15	6.25	6.20

Note--Ratings were on a 1 (boring) to 7 (enjoyable) scale.

Table 3

Number of Subjects who Played Pinball

during the First and Second Free-Choice Periods

	Contingency					
	First Free Choice			Second Free Choice		
Payment	None	CRF	VR	None	CRF	VR
None	7	9	7	5	4	6
$1.20	8	8	9	2	5	9
Combined	15	17	16	7	9	15

While these results could be accounted for in terms of a variety of viewpoints (e.g., the contrast hypothesis of Levine, Broderick, and Burkart, 1980), such interpretations would be speculative. What we did find was some evidence that a variable ratio schedule affects "intrinsic" behaviors in much the same way that it affects other behaviors, namely to increase resistance to extinction.

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